

Accepted Manuscript

Title: Recognition and quantification of HSA: A fluorescence probe across α -helices of site I and site II

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PII: S0925-4005(17)30465-3
DOI: <http://dx.doi.org/doi:10.1016/j.snb.2017.03.051>
Reference: SNB 21963

To appear in: *Sensors and Actuators B*

Received date: 23-11-2016
Revised date: 1-3-2017
Accepted date: 11-3-2017

Please cite this article as: Ping Shen, Jingyi Hua, Hongdu Jin, Jinya Du, Chunlin Liu, Wei Yang, Qingyun Gao, Huajun Luo, Yi Liu, Changying Yang, Recognition and quantification of HSA: A fluorescence probe across α -helices of site I and site II, *Sensors and Actuators B: Chemical* <http://dx.doi.org/10.1016/j.snb.2017.03.051>

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Recognition and quantification of HSA: A fluorescence probe across α -helices of site I and site II

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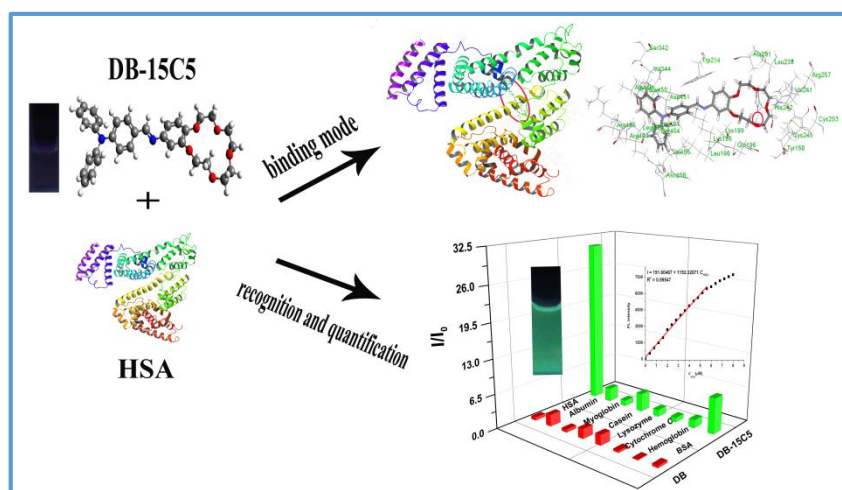
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Graphical Abstract



DB-15C5, consisting of 15-crown-5 ester and triphenylamine group, exhibited TICT properties in physiological environment. The specificity of DB-15C5 towards HSA over other proteins including BSA was verified. The docking results and experiments both proved that subdomain IIA plays a crucial role in binding affinity of DB-15C5 upon HSA, which involves in π - π stacking interactions and H-bond, but subdomain IIIA actually has an important effect in restriction of TICT excited state of DB-15C5. Good calibration graphs of the response to HSA and rather low LODs (1.7 nM in PBS, 29.5 nM in urine) enabled us to develop a potent functional molecular probe to determine the content of HSA in actual biosystems, not affected by other proteins and coexisted ions.

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